

Please add the following new claims.

Claim 51      An isolated protein comprising

(a)      an amino acid sequence encoded by SEQ ID NO 15 and having an antifungal activity; or a mutein of the amino acid sequence encoded by SEQ ID NO 15 having sufficient identity to the amino acid sequence of SEQ ID NO 15 to retain the antifungal activity of the amino acid sequence of SEQ ID NO 15; or a part of the amino acid sequence of SEQ ID NO 15 having antifungal activity; or

Sub P1  
C1  
(b)      an amino acid sequence encoded by SEQ ID NO 19 and having an antifungal activity; or a mutein of the amino acid sequence encoded by SEQ ID NO 19 having sufficient identity to the amino acid sequence of SEQ ID NO 19 to retain the antifungal activity of the amino acid sequence of SEQ ID NO 19; or a part of the amino acid sequence of SEQ ID NO 19 having antifungal activity; or

(c)      an amino acid sequence encoded by SEQ ID NO 57 and having an antifungal activity; or a mutein of the amino acid sequence encoded by SEQ ID NO 57 having sufficient identity to the amino acid sequence of SEQ ID NO 57 to retain the antifungal activity of the amino acid sequence of SEQ ID NO 57; or a part of the amino acid sequence of SEQ ID NO 57 having antifungal activity; or

(d)      an amino acid sequence encoded by SEQ ID NO 70 and having an antifungal

activity; or a mutein of the amino acid sequence encoded by SEQ ID NO 70 having sufficient identity to the amino acid sequence of SEQ ID NO 70 to retain the antifungal activity of the amino acid sequence of SEQ ID NO 70; or a part of the amino acid sequence of SEQ ID NO 70 having antifungal activity; or

Sub  
P1  
cont. }  
(e) an amino acid sequence encoded by SEQ ID NO 72 and having an antifungal activity; or a mutein of the amino acid sequence encoded by SEQ ID NO 72 having sufficient identity to the amino acid sequence of SEQ ID NO 72 to retain the antifungal activity of the amino acid sequence of SEQ ID NO 72; or a part of the amino acid sequence of SEQ ID NO 72 having antifungal activity; or

C |  
(f) an amino acid sequence encoded by SEQ ID NO 74 and having an antifungal activity; or a mutein of the amino acid sequence encoded by SEQ ID NO 74 having sufficient identity to the amino acid sequence of SEQ ID NO 74 to retain the antifungal activity of the amino acid sequence of SEQ ID NO 74; or a part of the amino acid sequence of SEQ ID NO 74 having antifungal activity.

Claim 52 An isolated protein according to claim 51, wherein the protein naturally occurs in sunflower or lettuce.

Claim 53 An isolated protein according to claim 51, wherein the protein has anti-Oomycete activity or anti-Phytophthora activity or anti-Pythium activity or a combination thereof.

Claim 54 An isolated protein according to claim 51, wherein the muteins in subparagraphs (a) - (f) differ from the respective amino acid sequences of which they are muteins only by the replacement, addition or deletion of one amino acid.

Claim 55 An anti-fungal composition comprising

(a) the isolated protein of claim 51; and

(b) a suitable carrier.

Claim 56 An isolated protein that occurs naturally in a plant, said protein having carbohydrate oxidase activity and antifungal activity.

Claim 57 A carbohydrate oxidase comprising:

(a) the amino acid sequence of SEQ ID NO 16 and having antifungal activity; or a mutein of the amino acid sequence of SEQ ID NO 16 having sufficient identity to the amino acid sequence of SEQ ID NO 16 to retain the antifungal activity of the amino acid sequence of SEQ ID NO 16; or a part of the amino acid sequence of SEQ ID NO 16 having antifungal activity; or

(b) the amino acid sequence of SEQ ID NO 20 and having antifungal activity; or a mutein of the amino acid sequence of SEQ ID NO 20 having sufficient identity to the amino acid sequence of SEQ ID NO 20 to retain the antifungal activity of the amino acid sequence of SEQ ID NO 20; or a part of the amino acid sequence of SEQ ID NO 20 having antifungal activity; or

(c) the amino acid sequence of SEQ ID NO 58 and having antifungal activity; or a mutein of the amino acid sequence of SEQ ID NO 58 having sufficient identity to the amino acid sequence of SEQ ID NO 58 to retain the antifungal activity of the amino acid sequence of SEQ ID NO 58; or a part of the amino acid sequence of SEQ ID NO 58 having antifungal activity; or

(d) the amino acid sequence of SEQ ID NO 71 and having antifungal activity; or a mutein of the amino acid sequence of SEQ ID NO 71 having sufficient identity to the amino acid sequence of SEQ ID NO 71 to retain the antifungal activity of the amino acid sequence of SEQ ID NO 71; or a part of the amino acid sequence of SEQ ID NO 71 having antifungal activity; or

C 1 (e) the amino acid sequence of SEQ ID NO 73 and having antifungal activity; or a mutein of the amino acid sequence of SEQ ID NO 73 having sufficient identity to the amino acid sequence of SEQ ID NO 73 to retain the antifungal activity of the amino acid sequence of SEQ ID NO 73; or a part of the amino acid sequence of SEQ ID NO 73 having antifungal activity; or

(f) the amino acid sequence of SEQ ID NO 75 and having antifungal activity; or a mutein of the amino acid sequence of SEQ ID NO 75 having sufficient identity to the amino acid sequence of SEQ ID NO 75 to retain the antifungal activity of the amino acid sequence of SEQ ID NO 75; or a part of the amino acid sequence of SEQ ID NO 75 having antifungal activity.

Claim 58 An isolated antifungal protein having antifungal activity and comprising at least one peptide selected from the group consisting of:

(a) the amino acid sequence of amino acids 1 to 25 of SEQ ID NO 1, or a mutein of

the amino acid sequence of amino acids 1 to 25 of SEQ ID NO 1 having sufficient identity to the amino acid sequence of amino acids 1 to 25 of SEQ ID NO 1 to retain the antifungal activity of the protein;

(b) the amino acid sequence of amino acids 1 to 25 of SEQ ID NO 2, or a mutein of the amino acid sequence of amino acids 1 to 25 of SEQ ID NO 2 having sufficient identity to the amino acid sequence of amino acids 1 to 25 of SEQ ID NO 2 to retain the antifungal activity of the protein;

C1 (c) the amino acid sequence of amino acids 1 to 118 of SEQ ID NO 6, or a mutein of the amino acid sequence of amino acids 1 to 118 of SEQ ID NO 6 having sufficient identity to the amino acid sequence of amino acids 1 to 118 of SEQ ID NO 6 to retain the antifungal activity of the protein;

(d) the amino acid sequence of amino acids 1 to 529 of SEQ ID NO 16, or a mutein of the amino acid sequence of amino acids 1 to 529 of SEQ ID NO 16 having sufficient identity to the amino acid sequence of amino acids 1 to 529 of SEQ ID NO 16 to retain the antifungal activity of the protein, or a part of the amino acid sequence of amino acids 1 to 529 of SEQ ID NO 16 having antifungal activity;

(e) the amino acid sequence of amino acids 1 to 529 of SEQ ID NO 20, or a mutein of the amino acid sequence of amino acids 1 to 529 of SEQ ID NO 20 having sufficient identity to the amino acid sequence of amino acids 1 to 529 of SEQ ID NO 20 to retain the antifungal activity of the protein, or a part of the amino acid sequence of amino acids 1 to 529 of SEQ ID

NO 20 having antifungal activity;

(f) the amino acid sequence of amino acids 1 to 21 of SEQ ID NO 49, or a mutein of the amino acid sequence of amino acids 1 to 21 of SEQ ID NO 49 having sufficient identity to the amino acid sequence of amino acids 1 to 21 of SEQ ID NO 49 to retain the antifungal activity of the protein;

(g) the amino acid sequence of amino acids 1 to 24 of SEQ ID NO 50, or a mutein of the amino acid sequence of amino acids 1 to 24 of SEQ ID NO 50 having sufficient identity to the amino acid sequence of amino acids 1 to 24 of SEQ ID NO 50 to retain the antifungal activity of the protein;

C (h) the amino acid sequence of amino acids 1 to 14 of SEQ ID NO 51, or a mutein of the amino acid sequence of amino acids 1 to 14 of SEQ ID NO 51 having sufficient identity to the amino acid sequence of amino acids 1 to 14 of SEQ ID NO 51 to retain the antifungal activity of the protein;

(i) the amino acid sequence of amino acids 1 to 540 of SEQ ID NO 58, or a mutein of the amino acid sequence of amino acids 1 to 540 of SEQ ID NO 58 having sufficient identity to the amino acid sequence of amino acids 1 to 540 of SEQ ID NO 58 to retain the antifungal activity of the protein, or a part of amino acid sequence of amino acids 1 - 529 of SEQ ID NO 58 having antifungal activity;

(j) the amino acid sequence of amino acids 1 to 508 of SEQ ID NO 71, or a mutein

of the amino acid sequence of amino acids 1 to 508 of SEQ ID NO 71 having sufficient identity to the amino acid sequence of amino acids 1 to 508 of SEQ ID NO 71 to retain the antifungal activity of the protein, or a part of the amino acid sequence of amino acids 1 to 508 of SEQ ID NO 71 having antifungal activity;

(k) the amino acid sequence of amino acids 1 to 508 of SEQ ID NO 73, or a mutein of the amino acid sequence of amino acids 1 to 508 of SEQ ID NO 73 having sufficient identity to the amino acid sequence of amino acids 1 to 508 of SEQ ID NO 73 to retain the antifungal activity of the protein, or a part of the amino acid sequence of amino acids 1 to 508 of SEQ ID NO 73 having antifungal activity; and

(l) the amino acid sequence of amino acids 1 to 509 of SEQ ID NO 75, or a mutein of the amino acid sequence of amino acids 1 to 509 of SEQ ID NO 75 having sufficient identity to the amino acid sequence of amino acids 1 to 509 of SEQ ID NO 75 to retain the antifungal activity of the protein; or a part of the amino acid sequence of amino acids 1 - 509 of SEQ ID NO 75 having antifungal activity.

Claim 59 An antifungal protein comprising an amino acid sequence encoded by the open reading frame of SEQ ID NO 15 or a part of said amino acid sequence having antifungal activity.

Claim 60 An antifungal protein comprising an amino acid sequence encoded by the open reading frame represented by SEQ ID NO 19 or a part of said amino acid sequence having antifungal activity.